

NATIONAL SCIENCE AND TECHNOLOGY STRATEGY ACT  
OF 2021

FEBRUARY 18, 2022.—Committed to the Committee of the Whole House on the State  
of the Union and ordered to be printed

Ms. JOHNSON of Texas, from the Committee on Science, Space, and  
Technology, submitted the following

R E P O R T

[To accompany H.R. 3858]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, Space, and Technology, to whom was  
referred the bill (H.R. 3858) to establish a national science and  
technology strategy, a quadrennial science and technology review,  
and for other purposes, having considered the same, reports favor-  
ably thereon without amendment and recommends that the bill do  
pass.

CONTENTS

	Page
I. Amendment .....	
II. Purpose of the Bill .....	2
III. Background and Need for the Legislation .....	2
IV. Committee Hearings .....	2
V. Committee Consideration and Votes .....	2
VI. Summary of Major Provisions of the Bill .....	3
VII. Section-By-Section Analysis (By Title and Section) .....	3
VIII. Committee Views .....	3
IX. Cost Estimate .....	3
X. Congressional Budget Office Cost Estimate .....	3
XI. Compliance with Public Law 104-4 (Unfunded Mandates) .....	5
XII. Committee Oversight Findings and Recommendations .....	5
XIII. Statement on General Performance Goals and Objectives .....	5
XIV. Federal Advisory Committee Statement .....	5
XV. Duplication of Federal Programs .....	5
XVI. Earmark Identification .....	5
XVII. Applicability to the Legislative Branch .....	5
XVIII. Statement on Preemption of State, Local, or Tribal Law .....	5
XIX. Changes in Existing Law Made by the Bill, As Reported .....	5
XX. Proceedings of Full Committee Markup .....	9

## II. PURPOSE OF THE BILL

The purpose of the bill is to establish a national science and technology strategy and a quadrennial science and technology review.

## III. BACKGROUND AND NEED FOR THE LEGISLATION

The Federal research and development (R&D) enterprise is spread across more than a dozen Federal agencies. The Office of Science and Technology Policy is charged with coordinating across those agencies and advising the President on cross-cutting S&T issues. Congress has also tasked OSTP with developing cross-agency strategies on specific topics, such as artificial intelligence and climate change science. However, there is no existing requirement or practice of developing a comprehensive outlook and strategy for Federal investments in science and technology. Given the importance of the R&D enterprise for the wellbeing, prosperity, and security of the American public, it is critical to approach it strategically and holistically. By developing a cross-cutting strategy for Science & Technology, as is already done for national defense, homeland security, and energy, the U.S. will improve its capacity to address emerging challenges and set priorities.

## IV. COMMITTEE HEARINGS

Pursuant to House Rule XIII, clause 3(c)(6), the Committee designates the following hearings as having been used to develop or consider the legislation:

On April 15, 2021, the Science, Space, and Technology Committee held a hearing entitled, “Reimagining Our Innovation Future.” The purpose of the hearing was to examine the current outlook for U.S. leadership in science and technology and discuss how new investments and new, inclusive models of partnership in science and technology can be leveraged to ensure continued leadership and address economic, security, environmental, public health, and other societal challenges from the local to the global level. The hearing witnesses included Mr. Norm Augustine; Dr. Frances H. Arnold, Linus Pauling Professor of Chemical Engineering, Bioengineering and Biochemistry at the California Institute of Technology; The Honorable Ernest J. Moniz, President and Chief Executive Officer of the Energy Futures Initiative and Former Secretary of the U.S. Department of Energy; and Dr. Farnam Jahanian, President of Carnegie Mellon University.

## V. COMMITTEE CONSIDERATION AND VOTES

On June 11, 2021, Ranking Member Michael Waltz, Representative Deborah Ross, Chairwoman Eddie Bernice Johnson, and Ranking Member Frank Lucas introduced H.R. 3858, the *National Science and Technology Strategy Act of 2021*. The bill was referred to the House Committee on Science, Space, and Technology.

On July 27, 2021, the Full Committee on Science, Space, and Technology met to consider the bill. There were no amendments. With a quorum present, Chairwoman Johnson moved that the Committee favorably report the bill, H.R. 3858, to the House. The motion was agreed to by a voice vote.

## VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

Directs OSTP to complete a comprehensive quadrennial review that will provide an overview of the nation's innovation landscape and provide policymakers, industry, researchers, and other stakeholders with unbiased data and analysis to identify the future needs, barriers, and opportunities for U.S. science and technology. Directs OSTP to develop a national science and technology strategy to provide recommendations for maintaining global leadership in science and technology.

## VII. SECTION-BY-SECTION ANALYSIS (BY TITLE AND SECTION)

### *Sec. 1. Short title*

### *Sec. 2. National Science and Technology strategy*

Requires the Director of OSTP to develop and submit to Congress a 4-year comprehensive national S&T strategy. Requires that the S&T strategy be consistent with other relevant Federal strategies, such as the national defense strategy, and describes the required elements of the report.

### *Sec. 3. Quadrennial Science and Technology review*

Requires the Director of OSTP to conduct a quadrennial review of the S&T enterprise and describes specific requirements for the scope and contents of each review.

## VIII. COMMITTEE VIEWS

Committee Views are reflected in the body of this report.

## IX. COST ESTIMATE

Pursuant to clause 3(c)(2) of rule XIII of the Rules of the House of Representatives, the Committee adopts as its own the estimate of new budget authority, entitlement authority, or tax expenditures or revenues contained in the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974.

## X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

U.S. CONGRESS,  
CONGRESSIONAL BUDGET OFFICE,  
*Washington, DC, February 14, 2022.*

Hon. EDDIE BERNICE JOHNSON,  
*Chairwoman, Committee on Science, Space, and Technology,*  
*House of Representatives, Washington, DC.*

DEAR MADAM CHAIRWOMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 3858, the National Science and Technology Strategy Act of 2021.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Madeleine Fox.

Sincerely,

PHILLIP L. SWAGEL,  
*Director.*

Enclosure.

<b>H.R. 3858, National Science and Technology Strategy Act of 2021</b>			
As ordered reported by the House Committee on Science, Space, and Technology on July 27, 2021			
By Fiscal Year, Millions of Dollars	2022	2022-2026	2022-2031
Direct Spending (Outlays)	0	0	0
Revenues	0	0	0
Increase or Decrease (-) in the Deficit	0	0	0
Spending Subject to Appropriation (Outlays)	1	4	not estimated
Statutory pay-as-you-go procedures apply?	No	<b>Mandate Effects</b>	
Increases on-budget deficits in any of the four consecutive 10-year periods beginning in 2032?	No	Contains intergovernmental mandate?	No
		Contains private-sector mandate?	No

H.R. 3858 would require the Office of Science and Technology Policy (OSTP) to review federal science and technology programs every four years and, using information collected during that review, develop a strategy to meet national research and development objectives. The initial review would be completed by December 31, 2022. At the completion of each quadrennial review the OSTP would report to the Congress, along with annual reports between those reviews, on priorities to maintain U.S. leadership in science and technology as well as global trends and threats to that leadership.

Using information from the OSTP, CBO expects that it would need seven additional staff to collect information on national and international trends, consult with other agencies, and develop the strategy. CBO estimates the additional staff and administrative activities would cost \$4 million over the 2022–2026 period; spending would be subject to the availability of appropriated funds.

The CBO staff contact for this estimate is Madeleine Fox. The estimate was reviewed by H. Samuel Papenfuss, Deputy Director of Budget Analysis.

#### XI. FEDERAL MANDATES STATEMENT

H.R. 3858 contains no unfunded mandates.

#### XII. COMMITTEE OVERSIGHT FINDINGS AND RECOMMENDATIONS

The Committee's oversight findings and recommendations are reflected in the body of this report.

#### XIII. STATEMENT ON GENERAL PERFORMANCE GOALS AND OBJECTIVES

The goals and objectives of H.R. 3858 are to establish a national science and technology strategy and a quadrennial science and technology review.

#### XIV. FEDERAL ADVISORY COMMITTEE STATEMENT

H.R. 3858, does not create any advisory committees.

#### XV. DUPLICATION OF FEDERAL PROGRAMS

Pursuant to clause 3(c)(5) of rule XIII of the Rules of the House of Representatives, the Committee finds that no provision of H.R. 3858 establishes or reauthorizes a program of the federal government known to be duplicative of another federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or the most recent Catalog of Federal Domestic Assistance.

#### XVI. EARMARK IDENTIFICATION

Pursuant to clause 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 3858 contains no earmarks, limited tax benefits, or limited tariff benefits.

#### XVII. APPLICABILITY TO THE LEGISLATIVE BRANCH

The Committee finds that H.R. 3858 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

#### XVIII. STATEMENT ON PREEMPTION OF STATE, LOCAL, OR TRIBAL LAW

This bill is not intended to preempt any state, local, or tribal law.

#### XIX. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, and existing law in which no change is proposed is shown in roman):

### **NATIONAL SCIENCE AND TECHNOLOGY POLICY, ORGANIZATION, AND PRIORITIES ACT OF 1976**

\* \* \* \* \*

#### **TITLE II—OFFICE OF SCIENCE AND TECHNOLOGY POLICY**

\* \* \* \* \*

#### **[SCIENCE AND TECHNOLOGY REPORT AND OUTLOOK**

**[SEC. 206.** (a) Notwithstanding the provisions of Reorganization Plan Number 1 of 1977, the Director shall render to the President for submission to the Congress no later than January 15 of each odd numbered year, a science and technology report and outlook (hereinafter referred to as the “report”) which shall be prepared under the guidance of the Office and with the cooperation of the Director of the National Science Foundation, with appropriate assistance from other Federal departments and agencies as the Office or the Director of the National Science Foundation deems necessary. The report shall include—

[(1) a statement of the President's current policy for the maintenance of the Nation's leadership in science and technology;

[(2) a review of developments of national significance in science and technology;

[(3) a description of major Federal decisions and actions related to science and technology that have occurred since the previous such report;

[(4) a discussion of currently important national issues in which scientific or technical considerations are of major significance;

[(5) a forecast of emerging issues of national significance resulting from, or identified through, scientific research or in which scientific or technical considerations are of major importance; and

[(6) a discussion of opportunities for, and constraints on, the use of new and existing scientific and technological information, capabilities, and resources, including manpower resources, to make significant contributions to the achievement of Federal program objectives and national goals.

[(b) The Office shall insure that the report, in the form approved by the President, is printed and made available as a public document.]

**SEC. 206. NATIONAL SCIENCE AND TECHNOLOGY STRATEGY.**

(a) *IN GENERAL.*—Not later than the end of each calendar year immediately after the calendar year in which a review under section 206b is completed, the Director of the Office of Science and Technology Policy, in consultation with the National Science and Technology Council, shall develop and submit to Congress a comprehensive national science and technology strategy of the United States to meet national research and development objectives for the following 4-year period (in this Act referred to as “the national science and technology strategy”).

(b) *REQUIREMENTS.*—Each national science and technology strategy required by subsection (a) shall delineate a national science and technology strategy consistent with—

(1) the recommendations and priorities developed by the review established in section 206b;

(2) the most recent national security strategy report submitted pursuant to section 1032 of the National Defense Authorization Act for Fiscal Year 2012 (50 U.S.C. 3043);

(3) other relevant national plans; and

(4) the strategic plans of relevant Federal departments and agencies.

(c) *CONSULTATION.*—The Director shall consult as necessary with the Office of Management and Budget and other appropriate elements of the Executive Office of the President to ensure that the recommendations and priorities delineated in the science and technology strategy are incorporated in the development of annual budget requests.

(d) *REPORT.*—The President shall submit to Congress each year a comprehensive report on the national science and technology strategy of the United States. Each report on the national science and technology strategy of the United States shall include a description of—

(1) *strategic objectives and priorities necessary to maintain the leadership of the United States in science and technology and to advance science and technology to address societal and national challenges, including near-term, medium-term, and long-term research priorities;*

(2) *programs, policies, and activities that the President recommends across all Federal agencies to achieve the strategic objectives in paragraph (1); and*

(3) *global trends in science and technology, including potential threats to the leadership of the United States in science and technology and opportunities for international collaboration in science and technology.*

(e) *PUBLICATION.—The Director shall, consistent with the protection of national security and other sensitive matters to the maximum extent practicable, make each report submitted under subsection (d) publicly available on an internet website of the Office.*

**SEC. 206b. QUADRENNIAL SCIENCE AND TECHNOLOGY REVIEW.**

(a) *REQUIREMENTS.—*

(1) *QUADRENNIAL REVIEWS REQUIRED.—Not later than December 31, 2022, and every 4 years thereafter, the Director of the Office of Science and Technology Policy shall complete a review of the science and technology enterprise of the United States (in this section referred to as the “quadrennial science and technology review”).*

(2) *SCOPE.—The quadrennial science and technology review shall be a comprehensive examination of the science and technology strategy of the United States, including recommendations for maintaining global leadership in science and technology and advancing science and technology to address the societal and national challenges and guidance on the coordination of programs, assets, capabilities, budget, policies, and authorities across all Federal research and development programs.*

(3) *CONSULTATION.—The Director of the Office of Science and Technology Policy shall conduct each quadrennial science and technology review under this subsection in consultation with—*

(A) *the National Science and Technology Council;*

(B) *the heads of other relevant Federal agencies;*

(C) *the President’s Council of Advisors on Science and Technology;*

(D) *the National Science Board;*

(E) *the National Security Council; and*

(F) *other relevant governmental and nongovernmental entities, including representatives from industry, institutions of higher education, nonprofit organizations, Members of Congress, and other policy experts.*

(4) *COORDINATION.—The Director shall ensure that each quadrennial science and technology review conducted under this section is coordinated with other relevant statutorily required reviews, and to the maximum extent practicable incorporates information and recommendations from existing reviews to avoid duplication.*

(b) *CONTENTS.—In each quadrennial science and technology review, the Director shall—*

(1) *provide an integrated view of, and recommendations for, science and technology policy across the Federal Government,*

*while considering economic and national security and other societal and national challenges;*

*(2) assess and recommend priorities for research, development and demonstration programs to maintain American leadership in science and technology;*

*(3) assess and recommend priorities for research, development, and demonstration programs to address societal and national challenges;*

*(4) assess the global competition in science and technology and identify potential threats to the leadership of the United States in science and technology and opportunities for international collaboration;*

*(5) assess and make recommendations on the science, technology, engineering, mathematics and computer science workforce in the United States;*

*(6) assess and make recommendations to improve regional innovation across the United States;*

*(7) assess and make recommendations to improve translation of basic research and the enhancement of technology transfer of federally funded research;*

*(8) assess and identify the infrastructure and tools needed to maintain the leadership of the United States in science and technology and address other societal and national challenges; and*

*(9) review administrative or legislative policies that affect the science and technology enterprise and identify and make recommendations on policies that hinder research and development in the United States.*

**(c) REPORTING.—**

*(1) IN GENERAL.—Not later than December 31 of the year in which a quadrennial science and technology review is conducted, the Director shall submit a report of the review to Congress.*

*(2) PUBLICATION.—The Director shall, consistent with the protection of national security and other sensitive matters to the maximum extent possible, make each report submitted under paragraph (1) publicly available on an internet website of the Office of Science and Technology Policy.*

\* \* \* \* \*



## XX. PROCEEDINGS OF THE FULL COMMITTEE MARKUP

**MARKUPS: H.R. 4609, THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY FOR THE FUTURE ACT OF 2021; H.R. 3858, THE NATIONAL SCIENCE AND TECHNOLOGY STRATEGY ACT OF 2021; H.R. 4588; THE REGIONAL INNOVATION ACT OF 2021; H.R. 4606, THE ENERGIZING TECHNOLOGY TRANSFER ACT, AND H.R. 4599, THE STEEL UPGRADING PARTNERSHIPS AND EMISSIONS REDUCTION ACT OR SUPER ACT OF 2021**

---

### MARKUP

BEFORE THE

COMMITTEE ON SCIENCE, SPACE,  
AND TECHNOLOGY

HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

JULY 27, 2021

**Serial No. CP: 117-7**

Printed for the use of the Committee on Science, Space, and Technology



Available via the World Wide Web: <http://science.house.gov>

**MARKUPS: H.R. 4609, THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY FOR THE FUTURE ACT OF 2021; H.R. 3858, THE NATIONAL SCIENCE AND TECHNOLOGY STRATEGY ACT OF 2021; H.R. 4588; THE REGIONAL INNOVATION ACT OF 2021; H.R. 4606, THE ENERGIZING TECHNOLOGY TRANSFER ACT, AND H.R. 4599, THE STEEL UPGRADING PARTNERSHIPS AND EMISSIONS REDUCTION ACT OR SUPER ACT OF 2021**

---

## MARKUP

BEFORE THE

COMMITTEE ON SCIENCE, SPACE,  
AND TECHNOLOGY  
HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

JULY 27, 2021

**Serial No. CP: 117-7**

Printed for the use of the Committee on Science, Space, and Technology



Available via the World Wide Web: <http://science.house.gov>

U.S. GOVERNMENT PUBLISHING OFFICE

45-196PDF

WASHINGTON : 2021

## COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HON. EDDIE BERNICE JOHNSON, Texas, *Chairwoman*

ZOE LOFGREN, California	FRANK LUCAS, Oklahoma,
SUZANNE BONAMICI, Oregon	<i>Ranking Member</i>
AMI BERA, California	MO BROOKS, Alabama
HALEY STEVENS, Michigan,	BILL POSEY, Florida
<i>Vice Chair</i>	RANDY WEBER, Texas
MIKIE SHERILL, New Jersey	BRIAN BABIN, Texas
JAMAAL BOWMAN, New York	ANTHONY GONZALEZ, Ohio
MELANIE A. STANSBURY, New Mexico	MICHAEL WALTZ, Florida
BRAD SHERMAN, California	JAMES R. BAIRD, Indiana
ED PERLMUTTER, Colorado	DANIEL WEBSTER, Florida
JERRY McNERNEY, California	MIKE GARCIA, California
PAUL TONKO, New York	STEPHANIE I. BICE, Oklahoma
BILL FOSTER, Illinois	YOUNG KIM, California
DONALD NORCROSS, New Jersey	RANDY FEENSTRA, Iowa
DON BEYER, Virginia	JAKE LATURNER, Kansas
CHARLIE CRIST, Florida	CARLOS A. GIMENEZ, Florida
SEAN CASTEN, Illinois	JAY OBERNOLTE, California
CONOR LAMB, Pennsylvania	PETER MELJER, Michigan
DEBORAH ROSS, North Carolina	VACANCY
GWEN MOORE, Wisconsin	VACANCY
DAN KILDEE, Michigan	
SUSAN WILD, Pennsylvania	
LIZZIE FLETCHER, Texas	

## C O N T E N T S

Tuesday, July 27, 2021

	Page
H.R. 4609— <i>the National Institute of Standards and Technology for the Future Act of 2021</i> .....	7
H.R. 3858— <i>the National Science and Technology Strategy Act of 2021</i> .....	187
H.R. 4588— <i>the Regional Innovation Act of 2021</i> .....	197
H.R. 4606— <i>the Energizing Technology Transfer Act</i> .....	267
H.R. 4599— <i>the Steel Upgrading Partnerships and Emissions Reduction Act or SUPER Act of 2021</i> .....	307

**H.R. 4609, THE NATIONAL INSTITUTE  
OF STANDARDS AND TECHNOLOGY  
FOR THE FUTURE ACT OF 2021**

---

**H.R. 3858, THE NATIONAL SCIENCE  
AND TECHNOLOGY STRATEGY ACT OF 2021**

---

**H.R. 4588, THE REGIONAL  
INNOVATION ACT OF 2021**

---

**H.R. 4606, THE ENERGIZING  
TECHNOLOGY TRANSFER ACT**

---

**H.R. 4599, THE STEEL UPGRADING  
PARTNERSHIPS AND EMISSIONS  
REDUCTION ACT OR SUPER ACT OF 2021**

---

**TUESDAY, JULY 27, 2021**

HOUSE OF REPRESENTATIVES,  
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,  
*Washington, D.C.*

The Committee met, pursuant to notice, at 10:01 a.m., in room 2318 of the Rayburn House Office Building, Hon. Eddie Bernice Johnson [Chairwoman of the Committee] presiding.

Chairwoman JOHNSON. Good morning. The Committee will come to order, and, without objection, the Chair is authorized to declare recess at any time. Pursuant to Committee Rules and House Rule 11, the Chair now set—to postpone roll call votes at any time. Today the Committee is meeting virtually and in person. I want to announce a couple of reminders to the Members about the conduct of the meeting. First, Members attending remotely should keep their video feed on as long as they're present in the meeting, and Members are responsible for their own microphones. Please also keep your microphones muted until you are speaking. And, finally, if Members have documents they wish to submit to the record, please e-mail them to the Committee Clerk, whose e-mail address was circulated prior to the meeting. Pursuant to notice, the Com-

mittee meets to consider the following measures. H.R. 4609, the *National Institute of Standards and Technology for the Future Act of 2021*, H.R. 3858, the *National Science and Technology Strategy Act of 2021*, H.R. 4588, the *Regional Innovation Act of 2021*, and H.R. 4606, the *Emerging Technology Transfer Act*, and finally, H.R. 4599, the *Steel Upgrading Partnerships and Emissions Reduction Act, or SUPER Act, of 2021*.

Good morning, and welcome to today's markup of five excellent bipartisan bills. All of these bills will help to ensure that our Nation remains a leader in innovation. Importantly, these bills also help to ensure that the whole Nation participates in the innovation economy, and that the whole Nation reaps the economic fruits of that participation. The first bill we will take up today is Representative Stevens and Waltz's *National Institute of Standards and Technology for the Future Act*, and I'm proud to co-sponsor this bill, and I want to thank my colleagues on both sides of the aisle for their thoughtful engagement and enthusiastic support for this critical agency.

The *NIST for the Future Act* is a comprehensive 5 year reauthorization for the agency. These accounts fund important measures, measurements, and technology research, as well as NIST's (National Institute of Standards and Technology's) instrumental manufacturing programs. The bill would also support NIST's infrastructure needs at a time when many of its buildings are in poor to critical condition. In total, the legislation authorizes \$7.9 billion over 5 years, allowing for growth that is both ambitious and sustainable. These investments are necessary to support a critical Federal agency charged with helping to advance U.S. competitiveness and innovation.

The next bill that we will consider is H.R. 3858, the *National Science and Technology Strategy Act of 2021*. I want to thank Representative Waltz and Ross for their work on this legislation. This bill directs the White House Office of Science and Technology Policy, or OSTP, to undertake a comprehensive review of the Nation's innovation landscape. The bill also directs OSTP to use this analysis to develop a national science and technology strategy.

The next bill that we will be considering is H.R. 4588, the *Regional Innovation Act of 2021*. I want to thank my colleagues, Representative Wild and Baird, for their important work on this legislation. Over the last 2 decades, much of the science and technology funding and capacity in this country has been concentrated in a few cities and regions. This bill would establish programs at both the Commerce and Energy Departments to address this imbalance. It would create more shared prosperity from our Federal R&D (research and development) dollars by creating regional technology and innovation hubs across the country.

And next we will consider H.R. 4606, the *Emerging Technology Transfer Act*. This bill is an updated version of a bipartisan bill that I and Representative Fleischmann introduced last year. It authorizes programs and funding to support the Department of Energy (DOE) technology transfer activities. These activities are critical to bringing the fruits of our public investment in clean energy research, development, and demonstration projects into the hands of America's communities. The bill also includes provisions to sup-

port the next generation of innovators, inventors, and entrepreneurs, and I want to thank Congresswoman Ross and Congressman Meijer for leading this important piece of legislation.

The last bill on the roster today is the *Steel Upgrading Partnerships and Emissions Reduction Act*, which is sponsored by Representative Gonzalez and Representative Lamb. This bill authorizes a program at the Department of Energy to advance technologies that will help reduce emissions from the steel manufacturing sector, allowing American steel manufacturers access to advanced and innovative technologies will ensure that the domestic steel manufacturing industry will remain competitive through the 21st century.

I look forward to a productive markup today, and I now recognize our Ranking Member, Mr. Lucas, for his opening remarks.

[The prepared statement of Chairwoman Johnson follows:]

Good morning, and welcome to today's markup of 5 excellent bipartisan bills. All of these bills will help to ensure that our Nation remains a leader in innovation. Importantly, these bills also help to ensure that the whole Nation participates in that innovation economy, and that the whole Nation reaps the economic fruits of that participation.

The first bill we will take up today is Representatives Stevens' and Waltz's *National Institute of Standards and Technology for the Future Act*. I am proud to co-sponsor this bill, and I want to thank my colleagues on both sides of the aisle for their thoughtful engagement and enthusiastic support for this critical agency. The *NIST for the Future Act* is a comprehensive 5 year reauthorization for the agency.

These accounts fund important measurement and technology research, as well as NIST's extramural manufacturing programs. The bill would also support NIST's infrastructure needs at a time when many of its buildings are in poor to critical condition. In total, the legislation authorizes \$7.9 billion over 5 years, allowing for growth that is both ambitious and sustainable. These investments are necessary to support a critical federal agency charged with helping to advance U.S. competitiveness and innovation.

The next bill that we will consider is H.R. 3858, the *National Science and Technology Strategy Act of 2021*. I want to thank Representatives Waltz and Ross for their work on this legislation. This bill directs the White House Office of Science and Technology Policy, or OSTP, to undertake a comprehensive review of the Nation's innovation landscape. The bill also directs OSTP to use this analysis to develop a national science and technology strategy.

The next bill that we will be considering is H.R. 4588, the *Regional Innovation Act of 2021*. I want to thank my colleagues, Representatives Wild and Baird, for their important work on this legislation. Over the last few decades, much of the science and technology funding and capacity in this country has been concentrated in a few cities and regions. This bill would establish programs at both the Commerce and Energy Departments to address this imbalance. It will create more shared prosperity from our federal R&D dollars by creating regional technology and innovation hubs across the country.

Next we will consider H.R. 4606, the *Energizing Technology Transfer Act*. This bill is an updated version of a bipartisan bill that I and Representative Fleischmann introduced last year. It authorizes programs and funding to support Department of Energy technology transfer activities. These activities are critical to bringing the fruits of our public investments in clean energy research, development, and demonstration projects into the hands of America's communities. The bill also includes provisions to support the next generation of inventors and entrepreneurs, and I want to thank Congresswoman Ross and Congressman Meijer for leading this important piece of legislation.

The last bill on the roster today is the *Steel Upgrading Partnerships and Emissions Reduction Act* which is sponsored by Representative Gonzalez and Representative Lamb. This bill authorizes a program at the Department of Energy to advance technologies that will help reduce emissions from the steel manufacturing sector.

Allowing American steel manufacturers access to advanced and innovative technologies will ensure that the domestic steel manufacturing industry will remain competitive through the 21st Century.

I look forward to a productive markup today.

Mr. LUCAS. Thank you, Chairwoman Johnson, for holding today's markup. The bills we're considering today are a continuation of the important and bipartisan work we've been doing on American scientific competitiveness. Last month the House overwhelmingly passed our legislation to redouble our investments in the National Science Foundation and the Department of Energy Office of Science. These bills are the cornerstones of our blueprint to build up America's research and technology enterprise. Today we're filling out the blueprint with the rest of the elements needed to shore up the Nation's technological success. First among those is reauthorizing the National Institute of Standard and Technology.

NIST is the most important government agency that most Americans have never heard of. As industry's laboratory, NIST's work to promote U.S. innovation supports roughly half of our gross domestic product. NIST gives businesses the measurement science, standards, and guidance they need to produce exceptional products that can be globally competitive. The *NIST for the Future Act* invests in the emerging technologies needed to drive progress, including cybersecurity, quantum sciences, artificial intelligence (AI), and advanced manufacturing. It also prioritizes scientific and technical research services, expands our support for American manufacturers, and upgrades outdated NIST facilities. Finally, it prioritizes our participation and leadership in international standard-setting bodies. As new technologies grow and spread, it's critical that we are able to influence the standards and specifications that guide their development. This investment in NIST will go far to support American competitiveness, and expand the resources available to American businesses. I want to thank Chairwoman Johnson, Chairwoman Stevens, and Ranking Member Walsh for working with me on this important bill.

Next we'll consider the *National Science and Technology Strategic Act* by Representative Waltz. This bill creates a strategic whole of government approach to research and development, ensuring better coordination between Federal agencies, and a more strategic plan for achieving U.S. research and development goals. Additionally, the bill requires the President to submit an annual report to Congress on national research priorities and activities, as well as global trends in science and technology, including potential threats to U.S. scientific leadership. A competitive, strategic approach to American research and development is more important now than ever, especially as we pass legislation to increase our investments in our Federal scientific enterprise. This bill ensures we are regularly reviewing and updating our research priorities so we're maximizing taxpayer dollars, and investing in the most critical areas of technological advancement.

Following that, we'll debate H.R. 4588, the *Regional Innovation Act*. This bill establishes innovation hubs across the country, ensuring technological development isn't limited solely to the coasts. I talk a lot about the value of taking advantage of talent across America, and giving diverse communities a chance to contribute to



important scientific work. This bill guarantees that we build out our technological capacity as we are driving innovation in geographically diverse areas, with at least 1/3 of the newly created regional innovation hubs in rural or underserved areas.

Next up is H.R. 4606, the *Energizing Technology Transfer Act*. This legislation is an important complement to the *DOE Science for the Future Act* because it helps turn the discoveries we make from basic research into useful technologies that private—the private sector can commercialize. Finally, we'll consider H.R. 4599, the *Steel Upgrading Partnerships and Emissions Reduction Act*, or the *SUPER Act*, for short. This bill is from Representatives Anthony Gonzalez and Conor Lamb, will support R&D into clean steel production use. This will help reduce carbon emissions, while supporting American manufacturing and production.

Together, these five bills address key components of American competitiveness. They were all developed with extensive stakeholder input through a bipartisan process. They're all intended to catalyze our scientific growth. The threat we face from China is real, and growing every day. It threatens American jobs, cybersecurity, and national security. But our plan to ensure our competitiveness is not about top-down planning, like the Communist Chinese Party (CCP). It's about coordinating our own strengths, bringing together all Federal agencies, and all sectors of the U.S. innovation economy together, to coordinate and ensure that the oxen are pulling the cart in the same direction.

The bills we're considering today, along with the *NSF for the Future Act*, and *DOE Science for the Future Act*, represent a thoughtful vision for American science and technology development that is strategic, comprehensive, and, importantly, workable. I'm very proud of the work this Committee and our staff has done, and I'd like to thank all my colleagues, particularly Chairwoman Johnson, for the work that went into these bills. I'm eager to mark them up today and pass them out of Committee. I believe we have a strong starting point for a competitive legislative package on American competitiveness, and I look forward to finalizing our policies into law. And with that, I yield back, Madam Chair.

[The prepared statement of Mr. Lucas follows:]

Thank you, Chairwoman Johnson, for holding today's markup. The bills we're considering today are a continuation of the important and bipartisan work we've been doing on American scientific competitiveness.

Last month, the House overwhelmingly passed our legislation to redouble our investment in the National Science Foundation and the Department of Energy Office of Science. These bills are the cornerstones of our blueprint to build up America's research and technology enterprise. Today we're filling out that blueprint with the rest of the elements needed to shore up our nation's technological success. First among those is reauthorizing the National Institute of Standards and Technology (NIST).

NIST is the most important government agency that most Americans have never heard of. As "industry's laboratory," NIST's work to promote U.S. innovation supports roughly half of our gross domestic product. NIST gives businesses the measurement science, standards, and guidance they need to produce exceptional products that can be globally competitive.

The *NIST for the Future Act* invests in the emerging technologies needed to drive progress, including cybersecurity, quantum sciences, artificial intelligence, and advanced manufacturing. It also prioritizes scientific and technical research services, expands our support for American manufacturers, and upgrades outdated NIST facilities. Finally, it prioritizes our participation and leadership in international standards-setting bodies. As new technologies grow and spread, it's critical that we

are able to influence the standards and specifications that guide their development. This investment in NIST will go far to support American competitiveness and expand the resources available to American businesses. I want to thank Chairwoman Johnson, Chairwoman Stevens, and Ranking Member Waltz for working with me on this important bill.

Next up we'll consider the *National Science and Technology Strategy Act* led by Ranking Member Waltz. This bill creates a strategic, whole-of-government approach to research and development, ensuring better coordination between federal agencies and a more strategic plan for achieving U.S. research and development goals. Additionally, the bill requires the President to submit an annual report to Congress on national research priorities and activities, as well as global trends in science and technology, including potential threats to U.S. scientific leadership. A comprehensive, strategic approach to American research and development is more important now than ever, especially as we pass legislation to increase our investments in our federal scientific enterprise. This bill ensures we are regularly reviewing and updating our research priorities so we're maximizing taxpayer dollars and investing in the most critical areas for technological advancement.

Following that, we'll debate H.R. 4588, the *Regional Innovation Act*. This bill establishes innovation hubs across the country, ensuring technological development isn't limited solely to the coasts. I talk a lot about the value of taking advantage of talent across America and giving diverse communities a chance to contribute to important scientific work. This bill guarantees that as we build out our technical capacity, we are driving innovation in geographically diverse areas, with at least one-third of the newly created regional innovation hubs in rural or under-served areas.

Next up is H.R. 4606, the *Energizing Technology Transfer Act*. This legislation is an important complement to the *DOE Science for the Future Act* because it helps turn the discoveries we make from basic research into useful technologies that the private sector can commercialize.

Finally, we'll consider H.R. 4599, the *Steel Upgrading Partnerships and Emissions Reduction Act*, or the SUPER Act for short. This bill, from Representatives Anthony Gonzalez and Conor Lamb, will support R&D into clean steel production and use. This will help reduce carbon emissions while supporting American manufacturing and production.

Together, these five bills address key components of American competitiveness. They were all developed with extensive stakeholder input through a bipartisan process, and they're all intended to catalyze our scientific growth.

The threat we face from China is real and growing every day. It threatens American jobs, cybersecurity, and national security. But our plan to ensure our competitiveness is not about top-down planning, like the Chinese Community Party. It's about coordinating our own strengths—bringing together all federal agencies, and all sectors of the U.S. innovation economy together to coordinate and ensure the oxen are pulling the cart in the same direction. The bills we are considering today, along with the *NSF for the Future Act* and *DOE Science for the Future Act*, represent a thoughtful vision for American science and technology development that is strategic, comprehensive, and—importantly—workable.

I'm very proud of the work this Committee and our staff have done. I'd like to thank all of my colleagues—particularly Chairwoman Johnson—for the work that went into these bills. I'm eager to mark them up today and pass them out of Committee. I believe we have a strong starting point for a comprehensive legislative package on American competitiveness, and I look forward to finalizing our policies into law.

Chairwoman JOHNSON. Committee will come back to order, and we will now consider H.R. 3858, the *National Science and Technology Strategy Act*. The Clerk will report the bill. Sorry.

The CLERK. H.R. 3858, a bill to establish a National Science and Technology Strategy, a Quadrennial Science and Technology Review, and for other purposes.

[The bill follows:]

117<sup>TH</sup> CONGRESS  
1<sup>ST</sup> SESSION

# H. R. 3858

To establish a national science and technology strategy, a quadrennial science and technology review, and for other purposes.

---

## IN THE HOUSE OF REPRESENTATIVES

JUNE 11, 2021

Mr. WALTZ (for himself, Ms. ROSS, Mr. LUCAS, and Ms. JOHNSON of Texas)  
introduced the following bill; which was referred to the Committee on  
Science, Space, and Technology

---

## A BILL

To establish a national science and technology strategy, a  
quadrennial science and technology review, and for other  
purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

### 3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “National Science and  
5 Technology Strategy Act of 2021”.

### 6 **SEC. 2. NATIONAL SCIENCE AND TECHNOLOGY STRATEGY.**

7 Section 206 of the National Science and Technology  
8 Policy, Organization, and Priorities Act of 1976 (42  
9 U.S.C. 6615) is amended to read as follows:

1 **“SEC. 206. NATIONAL SCIENCE AND TECHNOLOGY STRAT-**  
2 **EGY.**

3 “(a) IN GENERAL.—Not later than the end of each  
4 calendar year immediately after the calendar year in which  
5 a review under section 206b is completed, the Director of  
6 the Office of Science and Technology Policy, in consulta-  
7 tion with the National Science and Technology Council,  
8 shall develop and submit to Congress a comprehensive na-  
9 tional science and technology strategy of the United States  
10 to meet national research and development objectives for  
11 the following 4-year period (in this Act referred to as ‘the  
12 national science and technology strategy’).

13 “(b) REQUIREMENTS.—Each national science and  
14 technology strategy required by subsection (a) shall delin-  
15 eate a national science and technology strategy consistent  
16 with—

17 “(1) the recommendations and priorities devel-  
18 oped by the review established in section 206b;

19 “(2) the most recent national security strategy  
20 report submitted pursuant to section 1032 of the  
21 National Defense Authorization Act for Fiscal Year  
22 2012 (50 U.S.C. 3043);

23 “(3) other relevant national plans; and

24 “(4) the strategic plans of relevant Federal de-  
25 partments and agencies.

1       “(c) CONSULTATION.—The Director shall consult as  
2 necessary with the Office of Management and Budget and  
3 other appropriate elements of the Executive Office of the  
4 President to ensure that the recommendations and prior-  
5 ities delineated in the science and technology strategy are  
6 incorporated in the development of annual budget re-  
7 quests.

8       “(d) REPORT.—The President shall submit to Con-  
9 gress each year a comprehensive report on the national  
10 science and technology strategy of the United States. Each  
11 report on the national science and technology strategy of  
12 the United States shall include a description of—

13           “(1) strategic objectives and priorities necessary  
14 to maintain the leadership of the United States in  
15 science and technology and to advance science and  
16 technology to address societal and national chal-  
17 lenges, including near-term, medium-term, and long-  
18 term research priorities;

19           “(2) programs, policies, and activities that the  
20 President recommends across all Federal agencies to  
21 achieve the strategic objectives in paragraph (1);  
22 and

23           “(3) global trends in science and technology, in-  
24 cluding potential threats to the leadership of the  
25 United States in science and technology and oppor-

1       tunities for international collaboration in science and  
2       technology.

3       “(e) PUBLICATION.—The Director shall, consistent  
4       with the protection of national security and other sensitive  
5       matters to the maximum extent practicable, make each re-  
6       port submitted under subsection (d) publicly available on  
7       an internet website of the Office.”.

8       **SEC. 3. QUADRENNIAL SCIENCE AND TECHNOLOGY RE-**  
9       **VIEW.**

10       The National Science and Technology Policy, Organi-  
11       zation, and Priorities Act of 1976 (42 U.S.C. 6601 et seq.)  
12       is amended by inserting after section 206 the following:  
13       **“SEC. 206b. QUADRENNIAL SCIENCE AND TECHNOLOGY RE-**  
14       **VIEW.**

15       “(a) REQUIREMENTS.—

16       “(1) QUADRENNIAL REVIEWS REQUIRED.—Not  
17       later than December 31, 2022, and every 4 years  
18       thereafter, the Director of the Office of Science and  
19       Technology Policy shall complete a review of the  
20       science and technology enterprise of the United  
21       States (in this section referred to as the ‘quadren-  
22       nial science and technology review’).

23       “(2) SCOPE.—The quadrennial science and  
24       technology review shall be a comprehensive examina-  
25       tion of the science and technology strategy of the

1 United States, including recommendations for main-  
2 taining global leadership in science and technology  
3 and advancing science and technology to address the  
4 societal and national challenges and guidance on the  
5 coordination of programs, assets, capabilities, budg-  
6 et, policies, and authorities across all Federal re-  
7 search and development programs.

8 “(3) CONSULTATION.—The Director of the Of-  
9 fice of Science and Technology Policy shall conduct  
10 each quadrennial science and technology review  
11 under this subsection in consultation with—

12 “(A) the National Science and Technology  
13 Council;

14 “(B) the heads of other relevant Federal  
15 agencies;

16 “(C) the President’s Council of Advisors  
17 on Science and Technology;

18 “(D) the National Science Board;

19 “(E) the National Security Council; and

20 “(F) other relevant governmental and non-  
21 governmental entities, including representatives  
22 from industry, institutions of higher education,  
23 nonprofit organizations, Members of Congress,  
24 and other policy experts.



1           “(4) COORDINATION.—The Director shall en-  
2       sure that each quadrennial science and technology  
3       review conducted under this section is coordinated  
4       with other relevant statutorily required reviews, and  
5       to the maximum extent practicable incorporates in-  
6       formation and recommendations from existing re-  
7       views to avoid duplication.

8       “(b) CONTENTS.—In each quadrennial science and  
9       technology review, the Director shall—

10           “(1) provide an integrated view of, and rec-  
11       ommendations for, science and technology policy  
12       across the Federal Government, while considering  
13       economic and national security and other societal  
14       and national challenges;

15           “(2) assess and recommend priorities for re-  
16       search, development and demonstration programs to  
17       maintain American leadership in science and tech-  
18       nology;

19           “(3) assess and recommend priorities for re-  
20       search, development, and demonstration programs to  
21       address societal and national challenges;

22           “(4) assess the global competition in science  
23       and technology and identify potential threats to the  
24       leadership of the United States in science and tech-

1 nology and opportunities for international collabora-  
2 tion;

3 “(5) assess and make recommendations on the  
4 science, technology, engineering, mathematics and  
5 computer science workforce in the United States;

6 “(6) assess and make recommendations to im-  
7 prove regional innovation across the United States;

8 “(7) assess and make recommendations to im-  
9 prove translation of basic research and the enhance-  
10 ment of technology transfer of federally funded re-  
11 search;

12 “(8) assess and identify the infrastructure and  
13 tools needed to maintain the leadership of the  
14 United States in science and technology and address  
15 other societal and national challenges; and

16 “(9) review administrative or legislative policies  
17 that affect the science and technology enterprise and  
18 identify and make recommendations on policies that  
19 hinder research and development in the United  
20 States.

21 “(c) REPORTING.—

22 “(1) IN GENERAL.—Not later than December  
23 31 of the year in which a quadrennial science and  
24 technology review is conducted, the Director shall  
25 submit a report of the review to Congress.

27

194

8

1           “(2) PUBLICATION.—The Director shall, con-  
2       sistent with the protection of national security and  
3       other sensitive matters to the maximum extent pos-  
4       sible, make each report submitted under paragraph  
5       (1) publicly available on an internet website of the  
6       Office of Science and Technology Policy.”.

○

Chairwoman JOHNSON. Without objection, the bill is considered as read, and open to amendment at any point. Does anyone wish to be recognized to speak on the underlying bill?

Mr. WALTZ. Madam Chair, I wish to strike the last word.

Chairwoman JOHNSON. Mr. Waltz is recognized.

Mr. WALTZ. Thank you, Chairwoman Johnson, again for holding today's markup, and for the opportunity to speak on the *National Science and Technology Strategy Act*. I was honored to introduce this legislation earlier last month with Representative Ross, yourself, Chairwoman Johnson, and Ranking Member Lucas.

As we all know, investing in research and development is essential to maintaining U.S. competitiveness globally and protecting our national security, however, as we as a Congress increase our investments in R&D, we need to ensure our taxpayers' dollars are spent strategically and effectively, which is why I introduce the *National Science and Technology Strategy Act*. This bill requires the Office of Science and Technology Policy and the National Science and Technology Council to develop a National Science and Technology Strategy every 4 years.

Establishing a whole of government approach for R&D planning by increasing coordination amongst Federal agencies ensures everyone is on the same page when it comes to our R&D goals, and the path we will take to achieve these goals. Equally important to the strategy is that this legislation requires an assessment of potential threats to U.S. scientific leadership. Over the years we have seen our adversaries, especially the Chinese Communist Party, threaten U.S. security in various ways, often targeting our R&D with research theft and espionage. Our scientific community plays an important role in our national security, and we must ensure they know what upcoming trends and threats to look out for.

Again, I thank you for the opportunity to mark up this bipartisan bill today, and I urge my colleagues to support this legislation. I yield back.

Chairwoman JOHNSON. Thank you very much.

Ms. ROSS. Madam Chair?

Chairwoman JOHNSON. Ms. Ross.

Ms. ROSS. Thank you. I move to strike the last word.

Chairwoman JOHNSON. Ms. Ross is recognized for 5 minutes.

Ms. ROSS. Thank you so much, Madam Chair. H.R. 3858, the *National Science and Technology Strategy Act of 2021*, is a bipartisan bill introduced with the leadership of Congressman Waltz, yourself, and Ranking Member Lucas. The U.S. Government has an unrivaled R&D enterprise, but it is spread across more than a dozen Federal agencies, and so inefficiencies in cooperation could lead the—to the U.S. falling behind in key areas, such as artificial intelligence, climate research, and cybersecurity. This bill directs OSTP to complete a comprehensive quadrennial review that will provide an overview of the Nation's innovation landscape, and provide policymakers, industry, researchers, and other stakeholders with unbiased data and analysis to identify the future needs, barriers, and opportunities for U.S. science and technology.

U.S. global leadership in science and technology is essential, but it requires a whole of government approach like the one outlined in this bill. We use similar cross-cutting strategies in agencies like

Defense, Homeland Security, and Energy. I believe it is critical that we treat the Federal R&D enterprise with the same approach. I'd like to thank Congressman Waltz for his leadership on this issue, and I look forward to working with him to see this bill across the finish line. I urge my colleagues to support it, and I yield back.

Chairwoman JOHNSON. Thank you. Any further requests for time? Are there any amendments? Hearing no amendments, a reporting quorum being present, I move that the Committee on Science, Space, and Technology report H.R. 3858 to the House, with the recommendation that the bill be approved. Those in favor signify by saying aye. Those opposed, say no. The ayes have it, and the bill is favorably reported.

Without objection, the motion to consider is laid on the table. I ask unanimous consent that staff be authorized to make any necessary technical and conforming changes to the bill. Without objection, so ordered. Members will have 2 subsequent calendar days in which to submit supplementary, minority, or additional views on the measure.

